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Automatic Article Screening in Systematic Review

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Automatic Article Screening in Systematic Review

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In recent years, evidence-based medicine has become increasingly important in guiding health care practices. Systematic review, which is the core component of evidence-based medicine, attempts to identify and synthesize all the empirical evidence from online resources such as pubmed to answer a given research question. Usually a clinical researcher needs to choose dozens of related articles as references to work on systematic review. However, there are usually thousand of articles retried from pubmed after keywords searching, it is time consuming to read each of the articles to find the right ones.

My work is to apply text mining and machine learning techniques to screen articles automatically, to minimize the articles set without losing any right ones. This project is processing from three aspects: words, sentences and articles. Words are analyzed by counting term frequency, sentences are by parsing syntactic structures and semantic analyzing, articles are by analyzing general features like author, how many articles reference it. And the data sets are imbalance since the 'right' articles are only a very small part. So there are a lot of challenges to be addressed.

My work is currently focusing on words level, to try different feature selection methods and classifiers to improve the performance.